AI - Assignment 4

Patrick Nagel: patrick.nagel@h-brs.de
Iswariya Manivannan: iswariya.manivannan@smail.inf.h-brs.de

Due Date: 20.05.2019

1. During the lecture you have discussed two heuristics for the 8-puzzle: Manhattan distance and misplaced tiles (see slides if not yet covered in class). Your tasks for this week are:

- Implement a Greedy and A* agent for the 8-puzzle. The agents should be able to switch between both heuristics. Make sure to produce proper output to "visualize" the working of your program.
- Compare the performance of the solvers and the two heuristics. Provide data in your report to support your arguments (number of visited nodes, path cost, execution time, etc). Which works better?
  - Use the following initial configuration: $\begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \\ 8 & 6 & 7 \end{bmatrix}$ This configuration is close to the goal and hence, you can use it to test your program as it would not take much time to run.
  - Finally test your code with $\begin{bmatrix} 1 & 5 & 7 \\ 3 & 6 & 2 \\ 0 & 4 & 8 \end{bmatrix}$
  - Please note a goal configuration would mean $\begin{bmatrix} 0 & 1 & 2 \\ 3 & 4 & 5 \\ 6 & 7 & 8 \end{bmatrix}$

2. Answer the following questions regarding A* search:

- When is A* complete?
- When does A* end the search process?